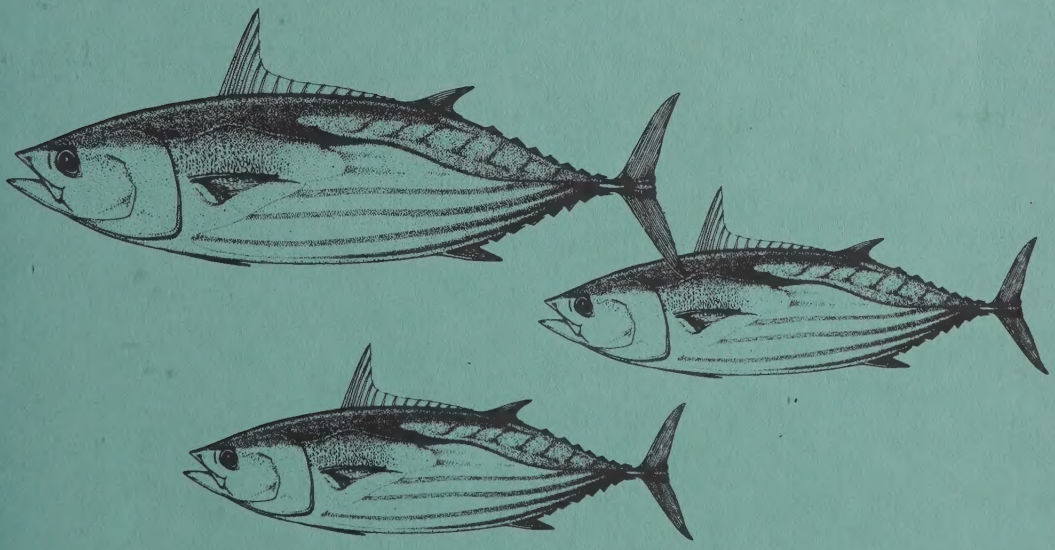
JULY 1977
No. 7

FISHING INFORMATION

Southwest Fisheries Center-La Jolla, California



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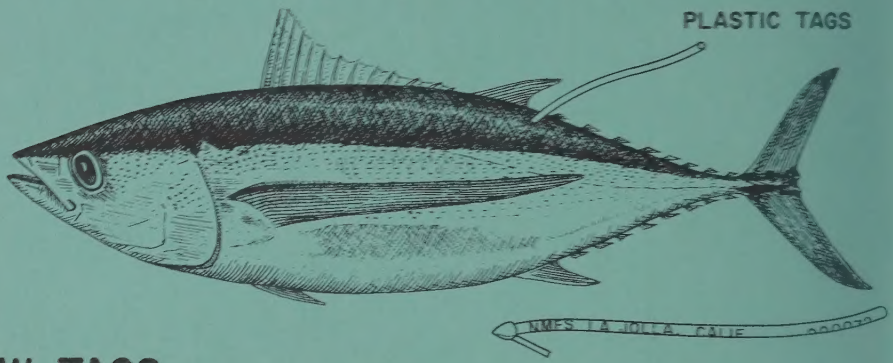
$ REWARD $

FOR ALBACORE TUNA TAGS



YELLOW TAGS

THE NATIONAL MARINE FISHERIES SERVICE WILL PAY $ 2.00 FOR EACH YELLOW TAG RECOVERED. (NO NEED TO RETURN FISH)

RECORD:

- ▶ WHERE
- ▶ WHEN
- ▶ HOW

} *FISH WAS CAUGHT*

- ▶ LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

FORWARD TO NMFS ADDRESS ON TAG

RED TAGS

THE NATIONAL MARINE FISHERIES SERVICE WILL PAY $ 50.00 FOR EACH RED TAG & FISH RETURNED. (FISH WITH TAG INTACT MUST BE RETURNED)

RECORD:

- ▶ WHERE
- ▶ WHEN
- ▶ HOW

} *FISH WAS CAUGHT*

- ▶ LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

NOTIFY NMFS P.O. BOX 271, LA JOLLA, CA. TEL. (714) 453-2820

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NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
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LA JOLLA, CALIFORNIA 92037

FISHING INFORMATION

JULY 1977, No. 7

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PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) charts of winds and pressures for the eastern North Pacific, 4) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 5) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. It contains a chart of sea surface temperature (contoured at 2°F (1°C) intervals) from Baja California to Vancouver Island out to about 135°W. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

The Secretary of Commerce has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department.

Submitted for publication - August 17, 1977

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ENVIRONMENTAL CHARTS ANALYZED BY:

F. Miller (Figures 8 and 9)
J. Renner (Figures 1, 2, 3, 4, 5, 6, 7, and 15 day Supplement)

TECHNICAL EDITOR:
R. Allen
CARTOGRAPHY:
R. Allen, H. Orr

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National Marine Fisheries Service, La Jolla, California; Honolulu, Hawaii
National Weather Service, San Diego, California and Washington, D.C.
National Ocean Survey, Pacific Marine Center, Seattle, Washington

Fisheries Research Board of Canada, Pacific Environment Institute, West Vancouver, British Columbia by L.F. Giovando from observations by
J. Redhead at Langara Island Light; D.C. Robinson at Cape St. James Light;
L. Collins at Kains Island Light; I.G. McNeil at Amphitrite Point Light
Scripps Institution of Oceanography, La Jolla, California

Expendable bathythermograph and salinity observations are made by the mates and engineers of the *Hawaiian Queen* of the Matson Navigation Co. The data are processed under supervision of D.R. McLain at the NMFS Pacific Environmental Group, Monterey, California, using computer facilities of the Fleet Numerical Weather Central, Monterey. The project is partially supported by the National Science Foundation and the Office of Naval Research.

Sea Surface Temperature and Environmental Conditions

Forrest R. Miller

Eastern North Pacific

During July 1977, the eastern Pacific subtropical high pressure system and associated wind circulation (Figure 2) was remarkably close to the 17-year average shown in Figure 1. The high pressure center was only 2 millibars above normal. In the Gulf of Alaska and along the Aleutian Islands, surface winds and pressures were also near normal.

As a result of two successive months (June and July) with nearly normal atmospheric circulation in the eastern North Pacific, most of the sea surface temperature (SST) departures from normal were less than 1°C (Figure 5). One exception to this occurred, as in June, on the northern and western boundary of the subtropical high pressure system. In this region, surface winds were strong and continued to maintain active ocean mixing. For example, along the west side of the high pressure center, SST's were more than 2°C below normal (Figure 5) and 1°-2°C colder than July 1976 (Figure 7). Negative SST departures more than 1°C also extended eastward from 150°W between 45°N and 52°N. South of this area, SST's were slightly above normal. Above-normal SST's north of 45°N along the Aleutians, and below-normal SST's to the southeast illustrate the intensification of the north-south SST gradient between 130°W and 160°W from 40°-45°N. Along the U.S. west coast from 36°-40°N the negative SST departure was associated with active coastal upwelling (Figure 5). Along the entire U.S. west coast SST's were 0.5°-1.0°C below those of July 1976 (Figure 7).

Western North Pacific

The SST pattern in July 1977 (Figure 4) was similar to last month with the North Pacific ocean front appearing as a compaction of surface isotherms between 40°N and 45°N. A pronounced subtropical ocean front appeared again in July between 30°N and 33°N. To the north of this frontal boundary, unusually large negative SST departures from normal developed between 30°N and 40°N east of 150°E (Figure 6). The below-normal SST's in this area were associated with a westward extension of the subtropical high pressure ridge (Figure 2). On the western and northern periphery of the high pressure center in the central western Pacific, strong surface winds caused considerable ocean mixing during the past 2 months. Over the far northern and western Pacific, summer heating and light winds allowed SST's to increase at above-normal rates.

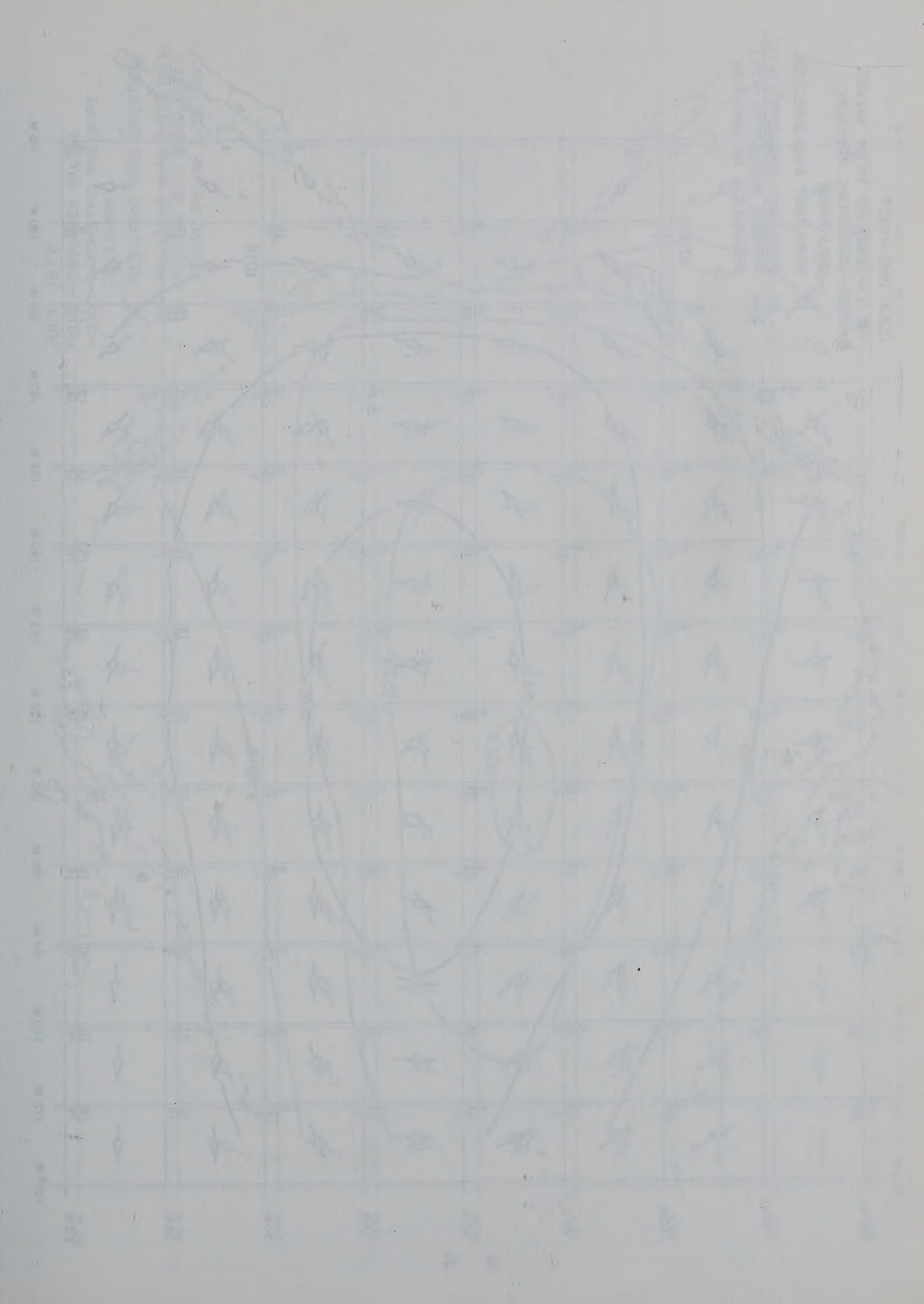
Eastern Tropical Pacific

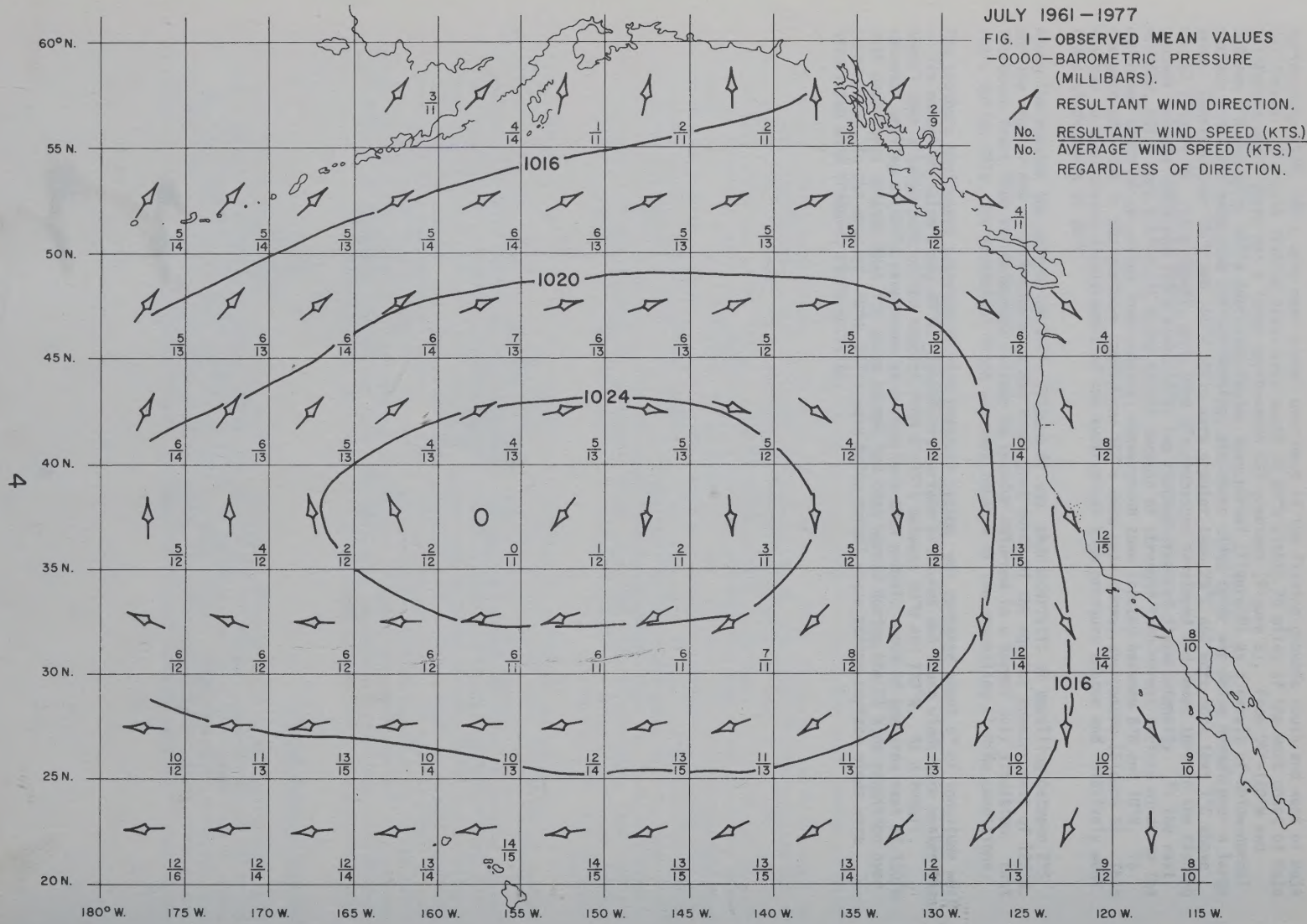
From June through July, SST's normally decrease 1°-2°C in the Peru Current north of 20°S and along the equator between Ecuador and 115°W. In the northern hemisphere, seasonal warming takes place in most areas with a maximum increase of 1°-1.5°C in July along the southwest coast of Baja California from 20°-25°N. From 5°-15°N and between 90°W and 110°W some cooling normally occurs where southerly winds intensify the mixing in the surface layers of the ocean. This is particularly true after several successive chubascos (tropical disturbances) have formed north of 10°N.

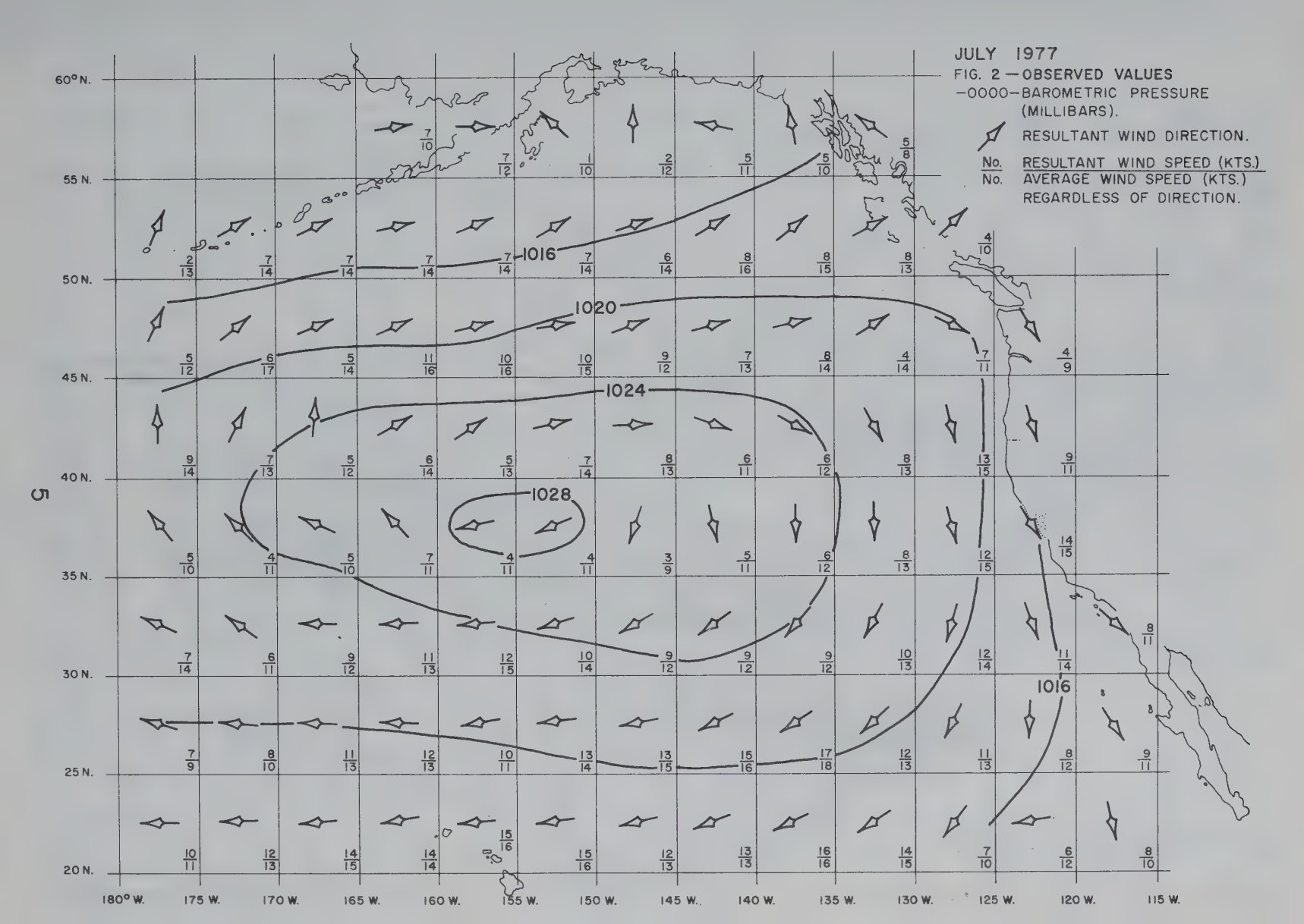
During July 1977, SST's were near normal over most of the fishing grounds south and west of Baja California. The best fishing areas were south of 25°N within 75 miles of the west coast of Baja California where there was a large north-south SST gradient (Figure 8). From 95°-120°W and between 5°N and 15°N, SST's increased faster than normal (Figure 9) as a result of below-normal surface winds and extensive surface heating, and where cloud cover was below normal over a large area. Centered near 10°N and 105°W SST's were greater than 29°C and were more than 1°C above normal (Figure 8). As a result, more than six chubascos developed and moved through the fishing grounds between 100°W and 115°W along 10°N; two reached tropical storm intensity. To the east of 95°W, SST's were 0.5°-1.0°C below normal because of stronger-than-normal surface winds to the north and south of an active intertropical convergence zone located between 5°N and 10°N. To the west of 120°W in the northern hemisphere SST's were near normal everywhere (Figure 9). This was due to a northward displacement of the subtropical high pressure center and relatively weak trade winds south of 20°N.

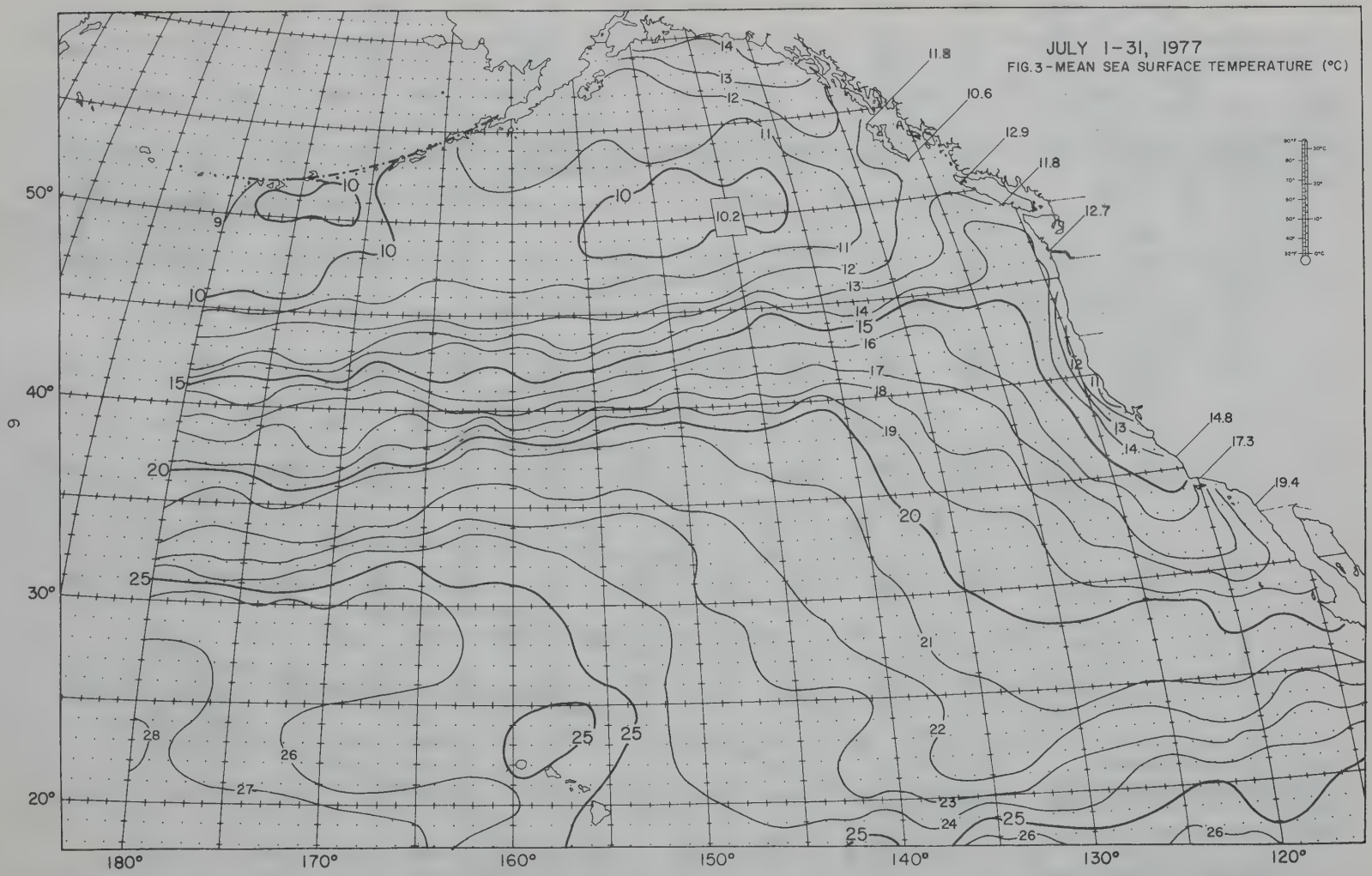
Along the equator the pattern of SST's (Figure 8) was characteristic of upwelling between 2°S and the equator and of a developing ocean front just north of the equator equator east of 125°W. The ocean front from the Galápagos Islands to Ecuador returned to a normal July situation. Last year, during July, the equatorial front was weak because of the prevailing El Niño conditions.

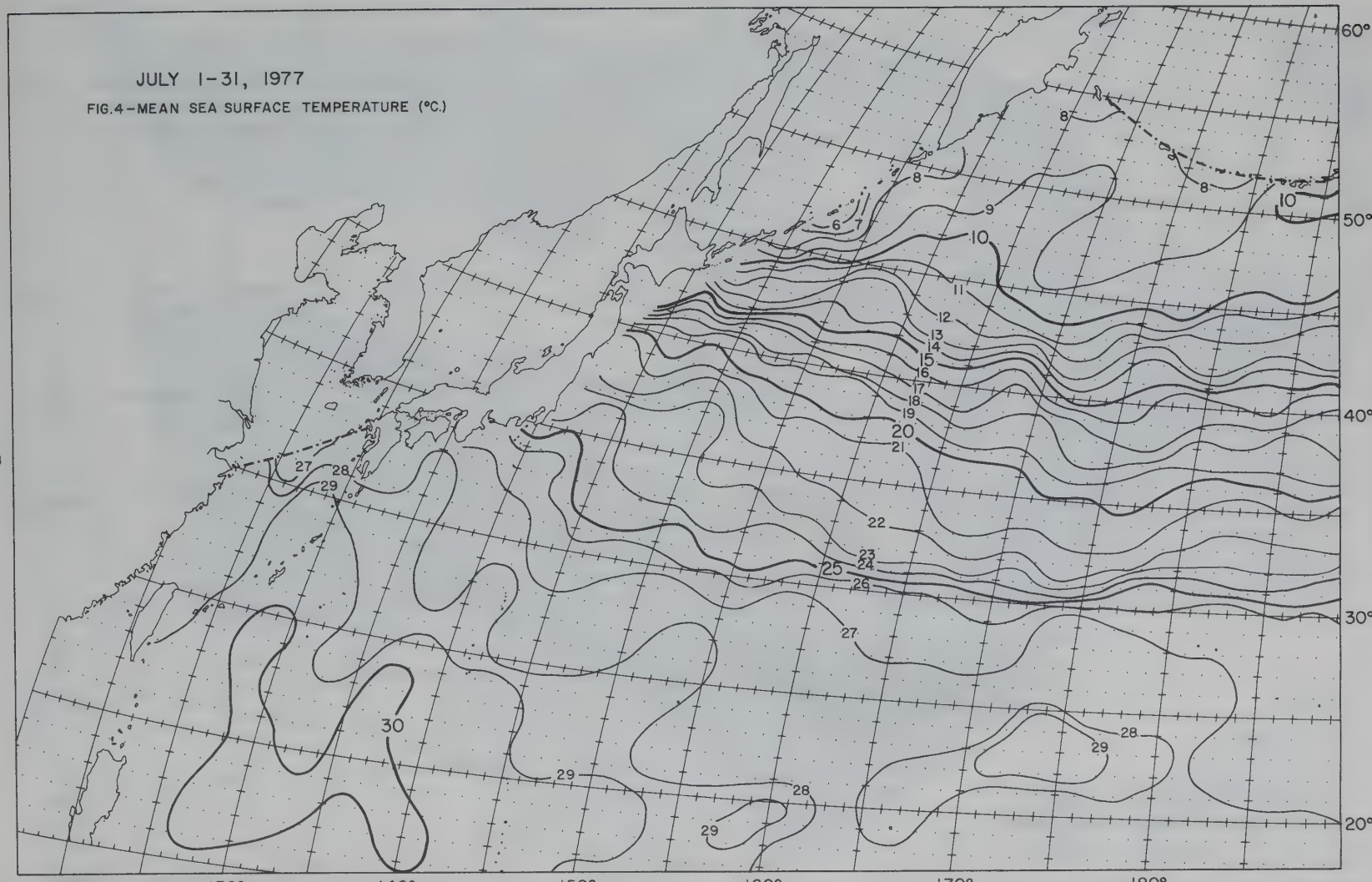
The southern hemisphere subtropical high pressure system was centered about 5° of longitude west of its normal position along 90°W. Therefore, surface pressures and trade winds were weaker than normal over a large part of the tropics from 5°-15°S between 80°W and 120°W. As a result, seasonal cooling of SST's progressed at a rate less than normal. Most of the area east of 120°W with departures greater than 1°C above normal had been warmed during the El Niño condition over 1 year ago. To the west of 140°W, SST's were below normal where strong surface winds were associated with frequent storm activity.

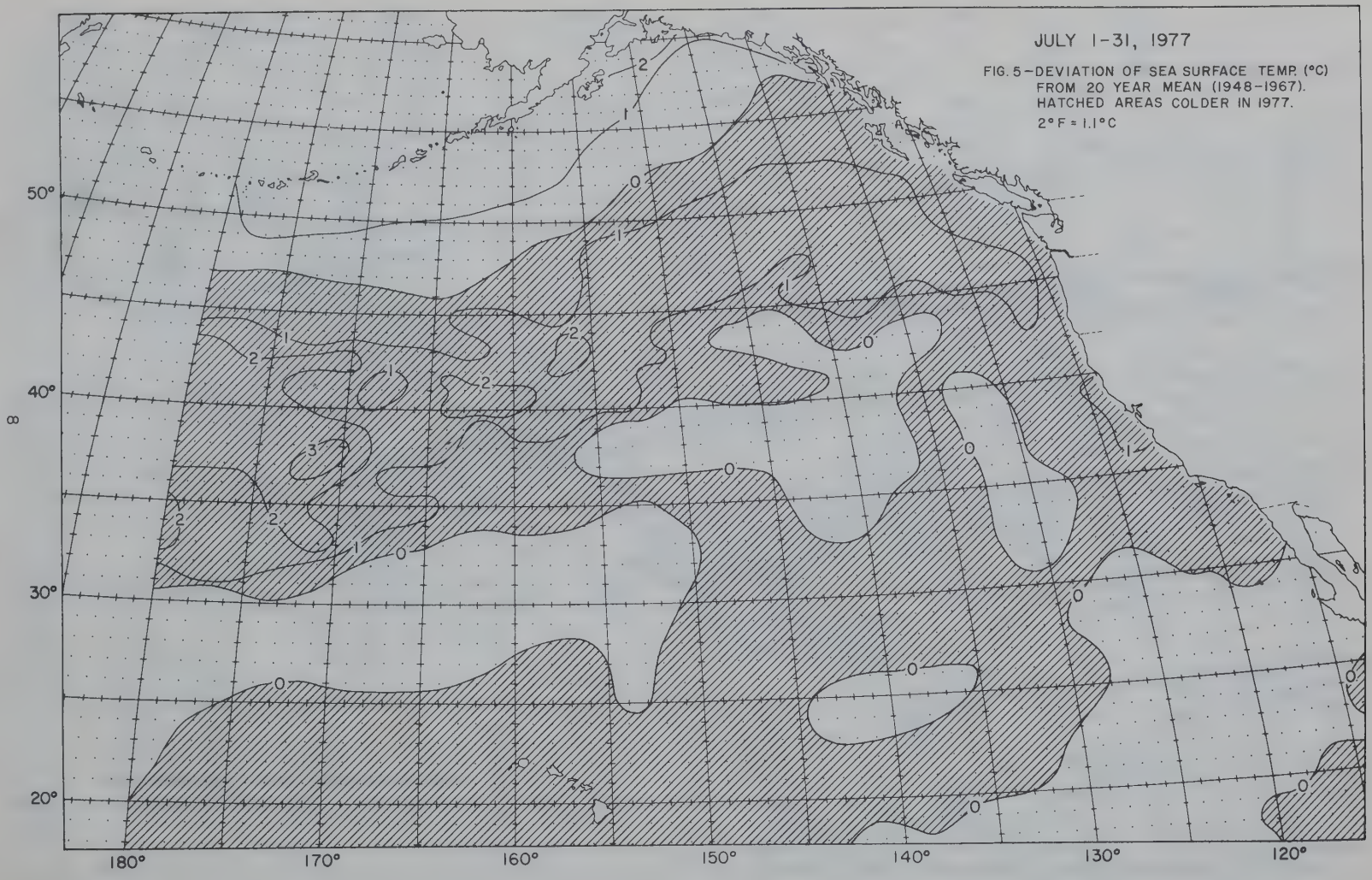


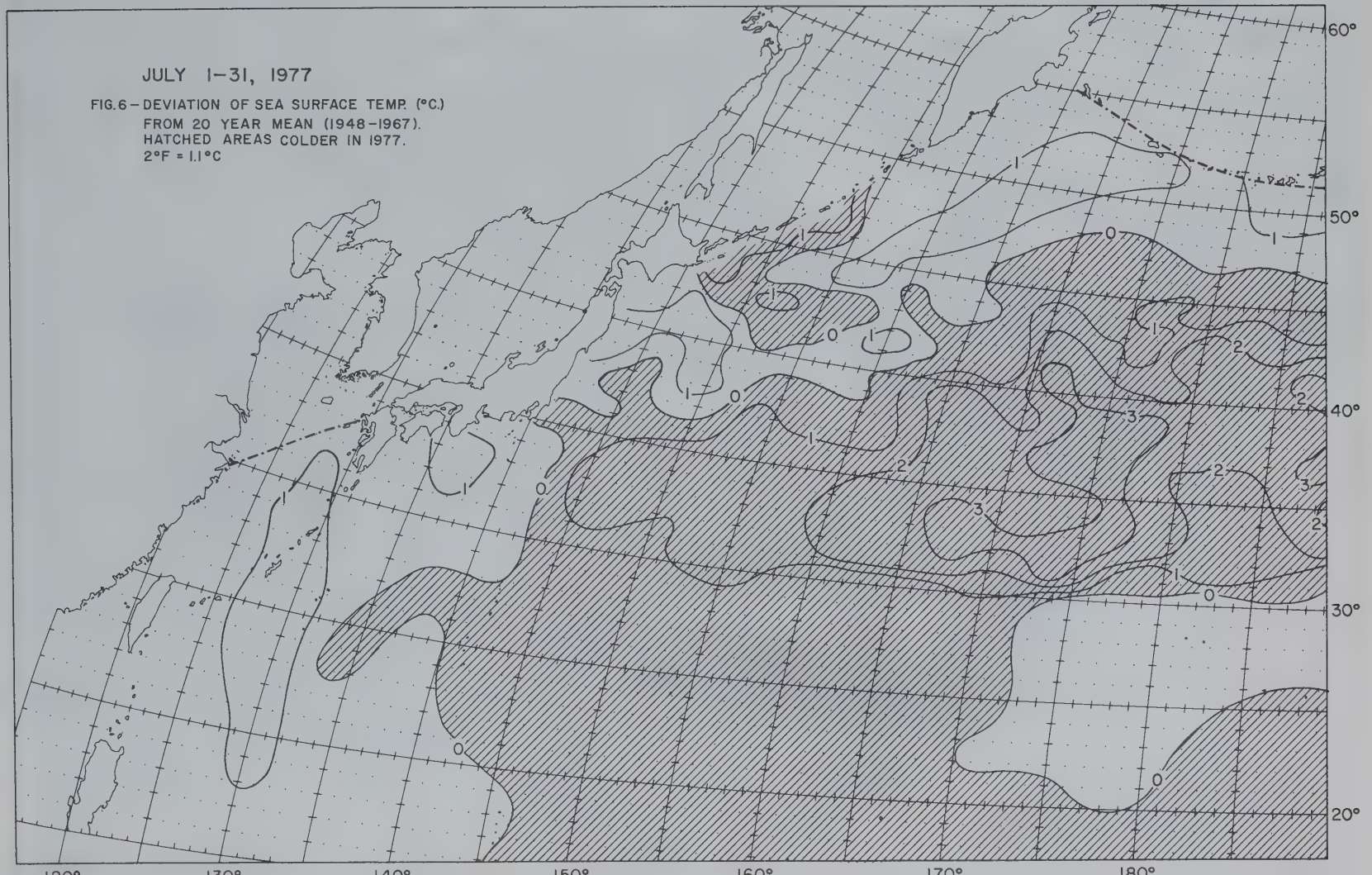

JULY 1961 – 1977
FIG. 1 – OBSERVED MEAN VALUES
–0000– BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.)
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1016
1020
1024
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

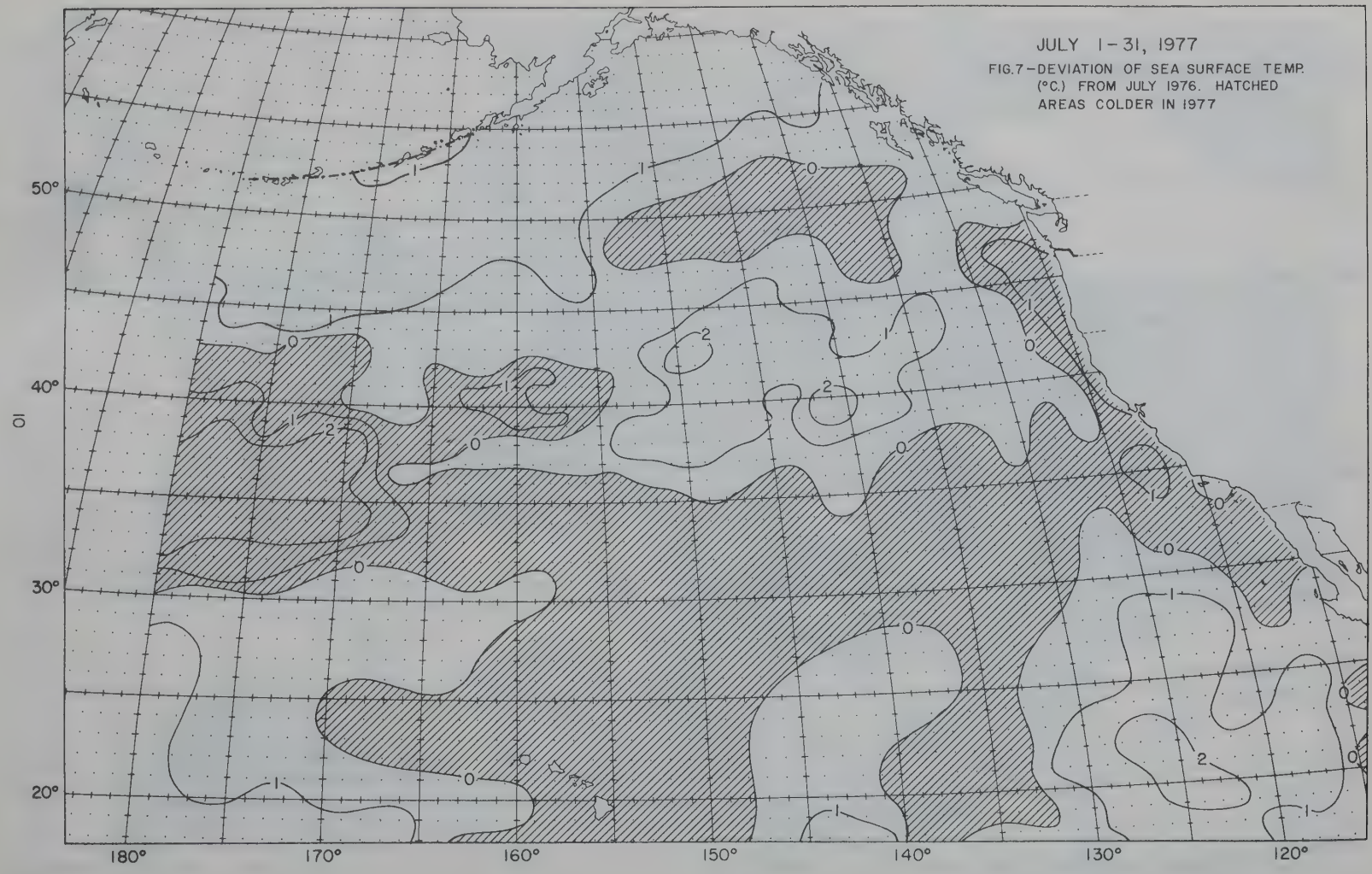

JULY 1977
FIG. 2 — OBSERVED VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. / No. RESULTANT WIND SPEED (KTS.) / AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1016
1020
1024
1028
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

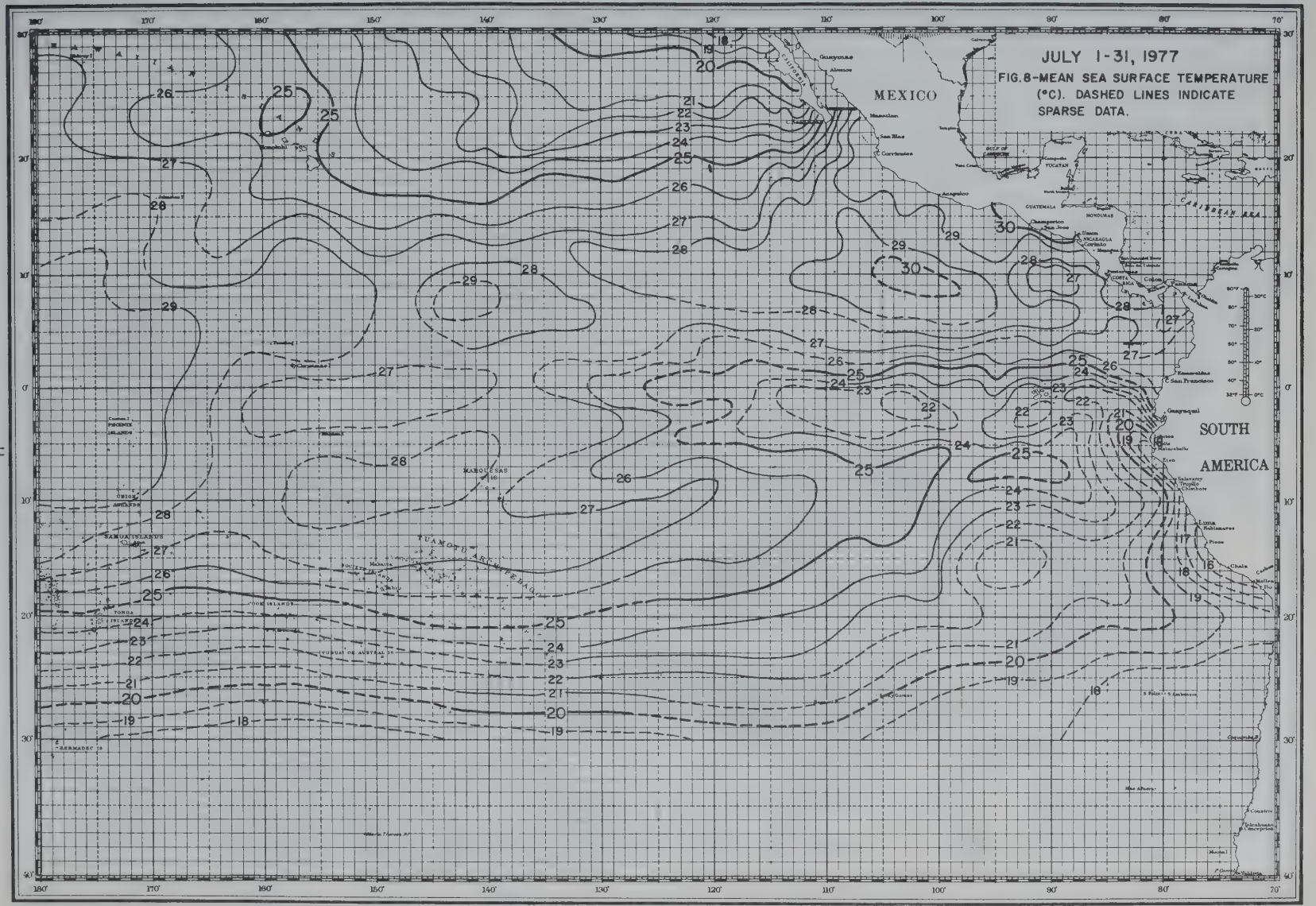

JULY 1-31, 1977
FIG.3-MEAN SEA SURFACE TEMPERATURE (°C)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
11.8
10.6
12.9
11.8
12.7
14.8
17.3
19.4
10.2
25
25
25
25
26
26
28
27


JULY 1-31, 1977
FIG.4-MEAN SEA SURFACE TEMPERATURE (°C.)
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


JULY 1-31, 1977
FIG. 5 – DEVIATION OF SEA SURFACE TEMP. (°C) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1977.
2° F = 1.1° C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


JULY 1–31, 1977
FIG. 6 – DEVIATION OF SEA SURFACE TEMP. (°C.)
FROM 20 YEAR MEAN (1948–1967).
HATCHED AREAS COLDER IN 1977.
2°F = 1.1°C
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


JULY 1-31, 1977
FIG.7-DEVIATION OF SEA SURFACE TEMP. (°C.) FROM JULY 1976. HATCHED AREAS COLDER IN 1977
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


JULY 1-31, 1977
FIG. 8-MEAN SEA SURFACE TEMPERATURE (°C). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
YUCATAN
MARQUESAS
SAMOA ISLANDS
TONGA ISLANDS
TUAMOTU ARCHIPELAGO
BERMADEC IS.
Guayaquil
Lima
Callao
Chile

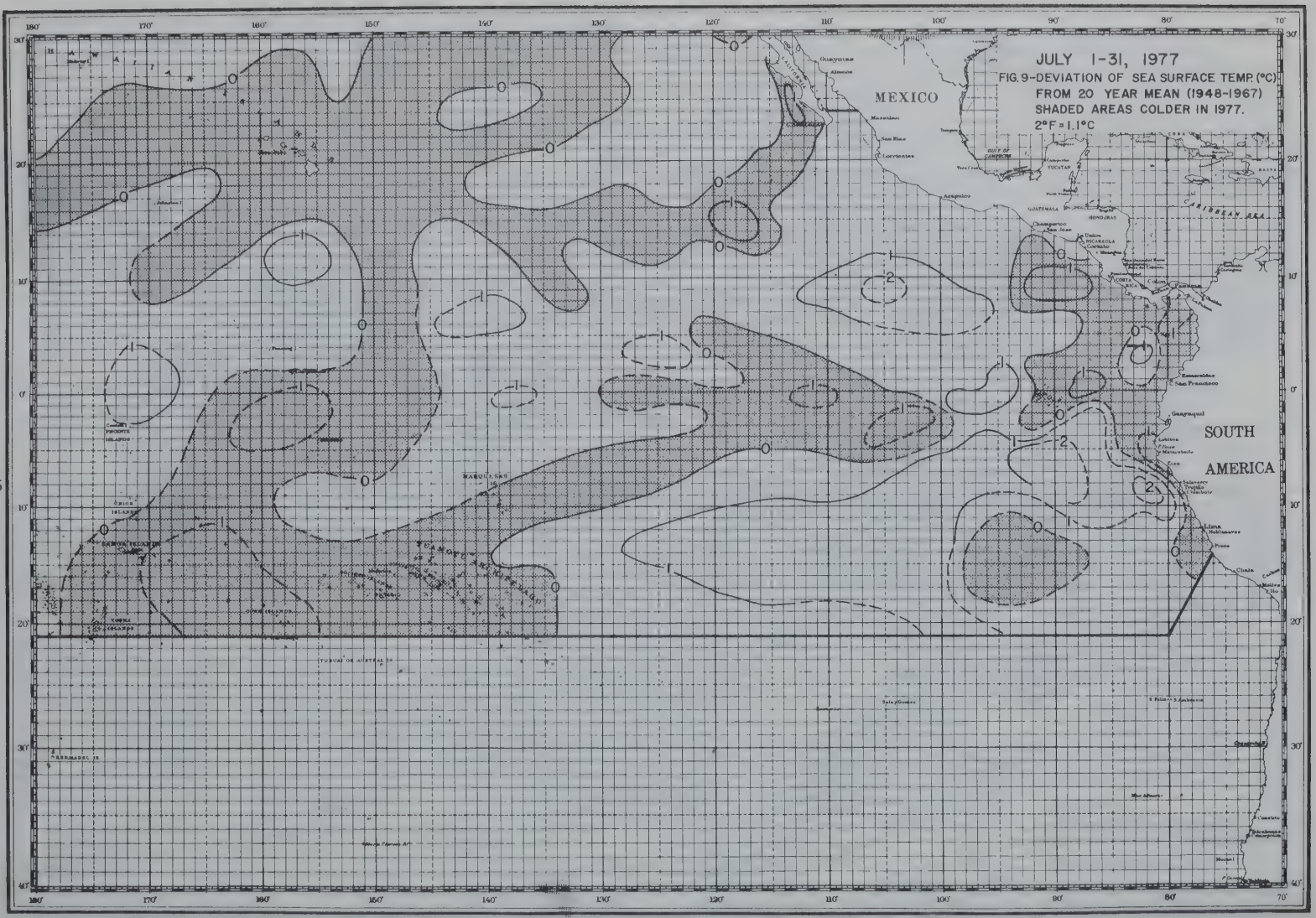

JULY 1-31, 1977
FIG. 9-DEVIATION OF SEA SURFACE TEMP. (°C) FROM 20 YEAR MEAN (1948-1967)
SHADED AREAS COLDER IN 1977.
2°F = 1.1°C
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
40°

FIGURE 10

SHIP HAWAIIAN QUEEN

VOYAGE 205

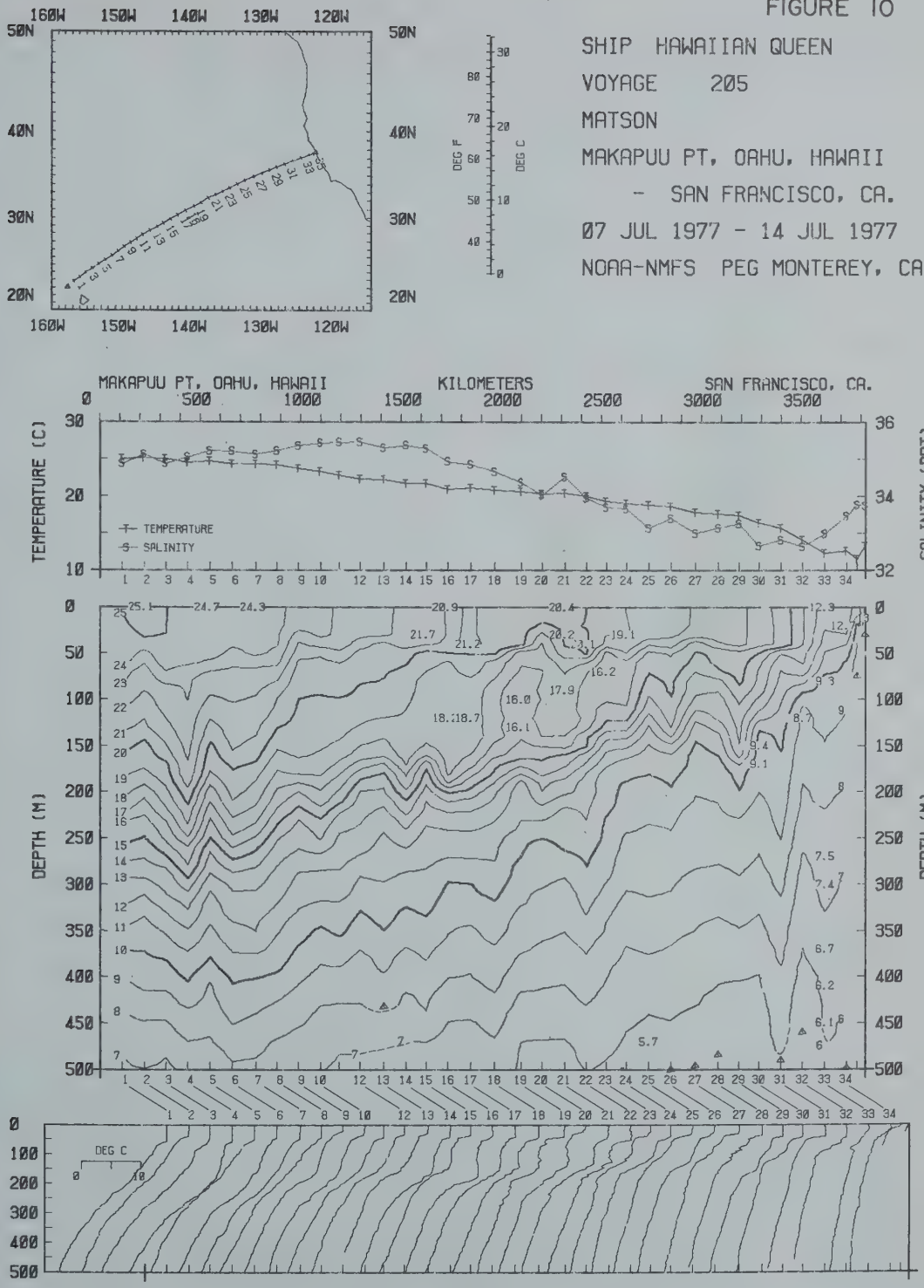
MATSON

MAKAPUU PT, OAHU, HAWAII

– SAN FRANCISCO, CA.

07 JUL 1977 – 14 JUL 1977

NOAA-NMFS PEG MONTEREY, CA.



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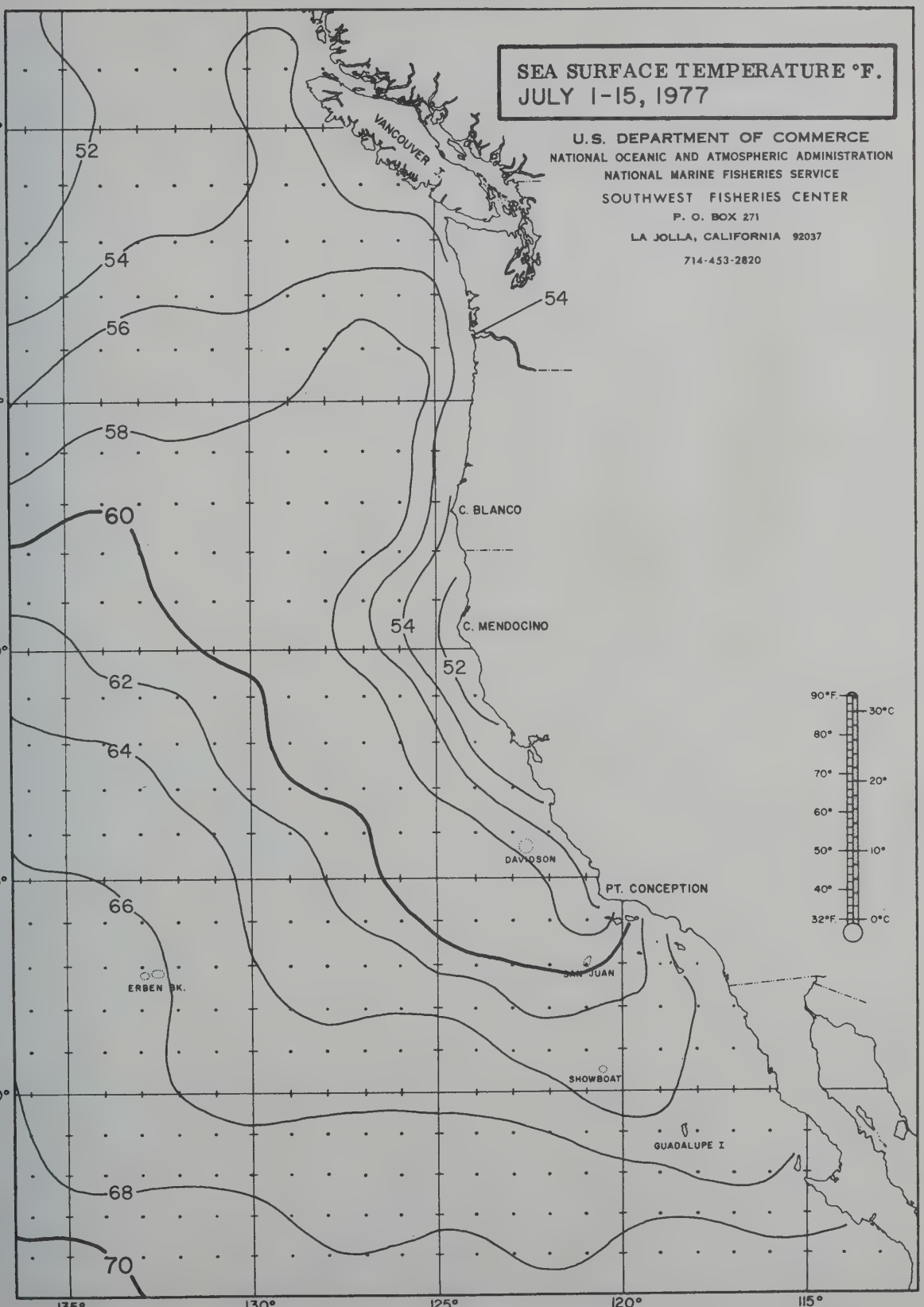

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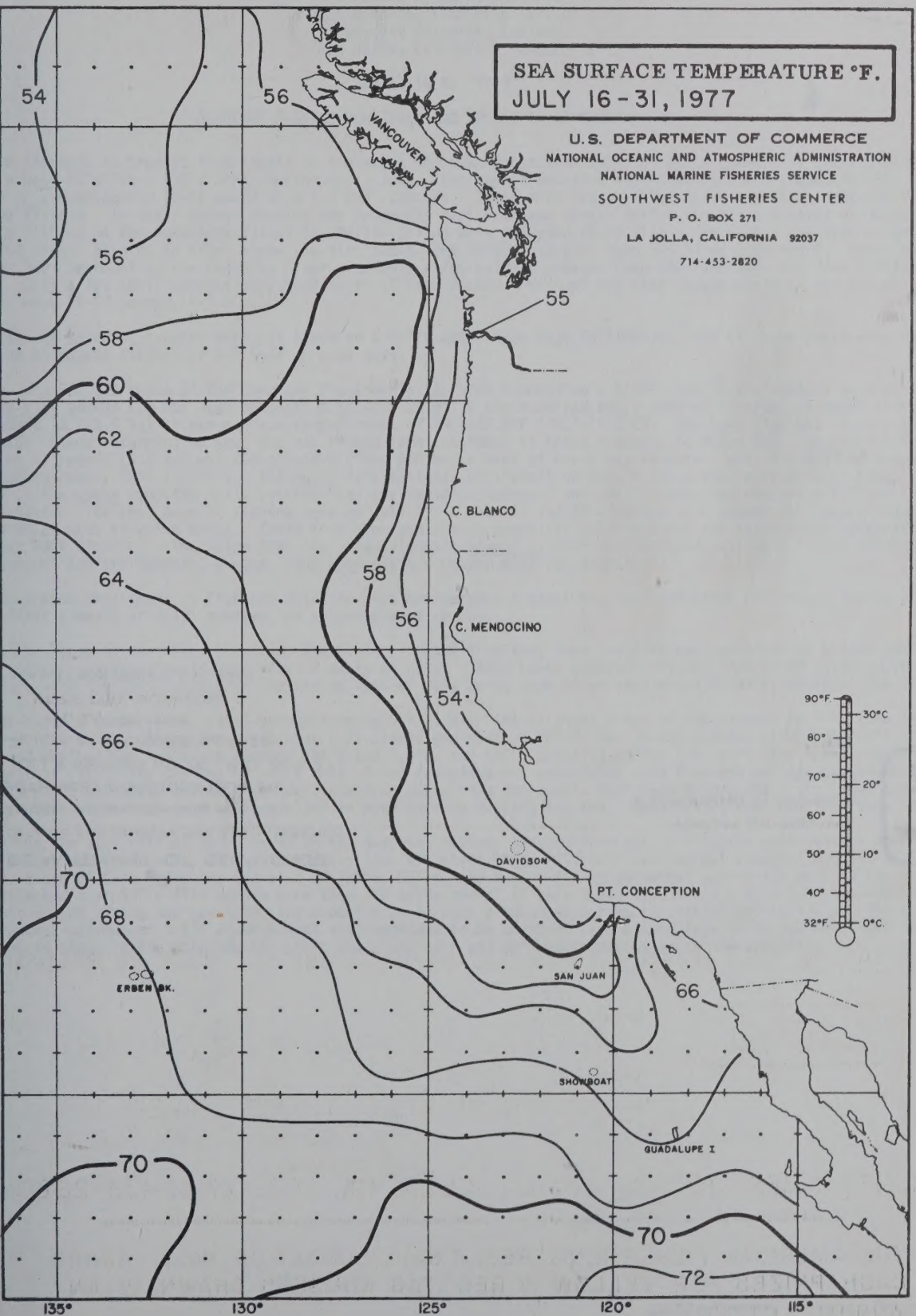

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NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
La Jolla, California 92038

Bulletin No. 77-3

ALBACORE FISHING SCATTERED AND MOSTLY IN SOUTHERN AREAS

vo jigboats in transit from Hawaii to the North American coast were able to locate commercial quantities of
re near 35°N lat., 135°W long. during early July. For approximately 8 days these boats averaged 150-300 fish
on predominantly 12-14 pound (5.5-6.4 kg) albacore. These fish are believed to be migrating into the North
n fishery. In other areas, fishing was generally scattered and spotty during the first 2 weeks of July.
s fishing in the Guadalupe Island-San Martin Island area averaged 20-40 fish a day with a few high scores of
50 fish. Fishing in other areas was also spotty and located farther than 100 miles from shore. Boats worked
n Juan Seamount to the Columbia River with only a few catches greater than 100 fish reported from California
Only a few small catches were made north of Cape Blanco. Most of the fish caught north of the San Juan
t were 11-13 pounds (5-5.9 kg).

though baitboat catches were not heard on a daily basis from Baja California, some of these boats were re-
to have made catches of 4-5 tons on some days.

July 18, all three of the American Fishermen's Research Foundation's (AFRF) chartered jigboats were at sea.
dy Olga worked the San Juan Seamount area from July 1-5 and reported small catches of albacore which averaged
ounds (3.2-5.5 kg) in sea-surface temperatures of 59.5-62.5°F (15.3-17.0°C). The Lady Olga was in port between
-10. Since returning to sea, she has fished from southwest of Point Arguello to Morro Bay. Her best catch
ng 12 pounds (5.5 kg) was 140 albacore taken 200 miles west of Morro Bay in waters with sea-surface tempera-
approximately 59°F (15.0°C). The Lusty left Ventura, California on July 5 and worked northward to Cape
ry. The Lusty reported small catches near the Davidson Seamount and small, scattered catches off Point Arena
rthward. Its best days of fishing were on July 11-12 when 41 and 59 albacore were caught from approximately
) miles west of Point Arena. These fish averaged 12½-13 pounds (5.7-5.9 kg) and the sea-surface temperature
out 59°F (15.0°C). The third AFRF chartered jigboat, Four C's, left Astoria on July 13 and fished offshore to
eamount and off Newport, Oregon. The Four C's has caught only two albacore.

he Oregon Department of Fish and Wildlife also chartered a jigboat to scout the areas off Oregon during part
first 2 weeks of July; however, no albacore were caught.

atches made by San Diego based sportboats have ranged from less than one fish per passenger to better than
fish per passenger during the first 2 weeks of July. These boats generally fished from 60-90 miles south of
ego, with the best catches in the second week of July being made in an area about 60 miles south of San Diego.

ea-surface temperatures (SST) warmed from July 1-15 over the offshore areas of the eastern Pacific (see chart)
r-normal rates. Along the coast near Cape Blanco and east of 126°W, the 15-day warming trend was 1-2°F above
and west of San Francisco between 124°W and 125°W, the SST's actually cooled 1-2° more than normal during the
alf of July. The cooling of SST's west of San Francisco was associated with frequent periods of strong
rly winds and heavy mixing of colder, upwelled water from the coast. Near Cape Blanco the light winds and
ve clear skies from July 1-15 resulted in more surface heating and less ocean mixing and upwelling than normal.

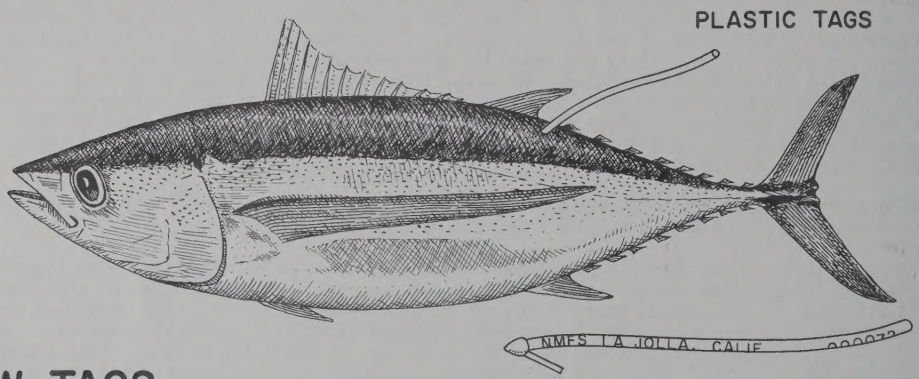
uring the last half of July, based on the National Weather Service forecast of slightly above-normal surface
res centered near 40°N, 140°W, it appears that off shore there will be a near-normal warming trend in SST's.
r, south of Cape Mendocino and east of 125°W, SST's have been 1-2°F below normal during the past 15 days.
expected that SST's will remain more than 1°F below normal in this area, especially within 100 miles of the
where wind mixing and upwelling are expected to be most pronounced during the latter half of July. The areas
reatest warming of 1-2°F above normal will continue to be north of Cape Blanco from 50 to 200 miles off shore.
rea is shown in the attached SST chart where the 56°F and 58°F isotherms bulge to the northeast.

8, 1977

Staff, Albacore Fisheries Program
R. Michael Laurs, Leader

$ REWARD $

FOR ALBACORE TUNA TAGS



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- ▶ WHERE
- ▶ WHEN
- ▶ HOW

} *FISH WAS CAUGHT*

- ▶ LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

FORWARD TO NMFS ADDRESS ON TAG

RED TAGS

THE NATIONAL MARINE FISHERIES SERVICE WILL PAY $ 50.00 FOR EACH RED TAG & FISH RETURNED. (FISH WITH TAG INTACT MUST BE RETURNE

RECORD:

- ▶ WHERE
- ▶ WHEN
- ▶ HOW

} *FISH WAS CAUGHT*

- ▶ LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

NOTIFY NMFS P.O. BOX 271, LA JOLLA, CA. TEL. (714) 453-2820

THE AMERICAN FISHERMEN'S RESEARCH FOUNDATION WILL AWARD CASH PRIZES FOR YELLOW & RED TAG NUMBERS DRAWN IN AN ANNUAL LOTTERY.